STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

IN THE MATTER OF GRANTING A WATER QUALITY CERTIFICATION TO: Puget Sound Energy, Inc. in accordance with 33 USC 1341 FWPCA § 401, RCW 90.48.260 and WAC 173-201A	)))))	**ORDER NO. 2525** Re-Licensing of the Baker River Hydro-Electric Project (FERC No. 2150-033), Skagit/Whatcom Counties, Washington

TO: Mr. Robert Barnes
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On March 10, 2005, Puget Sound Energy (PSE) filed an application with the State of Washington Department of Ecology (Ecology) requesting issuance of a certification under the provisions of Section 401 of the Clean Water Act (33 USC § 1341) to be submitted with its application for a license to the Federal Energy Regulatory Commission (FERC) for the Baker River Hydroelectric Project.

1.0 NATURE OF PROJECT

The Baker River Hydroelectric Project is located in the Northern Cascade Mountain Range northeast of the town of Concrete. The Project includes two hydroelectric facilities: Upper Baker Dam and Lower Baker Dam. The Project is managed for power generation, with a total capacity of 170 megawatts, and for flood control, recreation, and fish resources.

Upper Baker Dam and the Baker Lake reservoir reside in Whatcom County. The dam is approximately 312 feet high and 1,200 feet wide at the crest. Water for hydropower is conveyed from the intake at the dam via two 320-foot-long penstocks to the powerhouse. Water from the dam and powerhouse empty into a tailrace that ultimately leads to Lake Shannon.

Lower Baker Dam and the Lake Shannon reservoir are in Skagit County. The Lower Baker Dam is approximately 285 feet high and 550 feet long. Water for hydropower is conveyed from the intake at the dam via a 586 foot-long penstock to the powerhouse. Flow from the powerhouse empties into a tailrace, and then flows approximately 0.9 miles to the Skagit River.

2.0 AUTHORITIES

In exercising authority under Section 401 of the Clean Water Act (33 USC § 1341) and the Washington State Water Pollution Control Act (RCW 90.48.260), Ecology has investigated this application pursuant to the following:

1) Conformance with all applicable water quality-based, technology-based, and toxic or pretreatment effluent limitations as provided under Sections 301, 302, 303, 306, and 307 of the Clean Water Act (33 USC Sections§§ 1311, 1312, 1313, 1316, and 1317) (FWPCA Sections 301, 302, 303, 306, and 307);

2) Conformance with any and all applicable provisions of Chapter 90.48 RCW, including the provision to use all known, available and reasonable methods to prevent and control pollution of state waters as required by RCW 90.48.010; and

3) Conformance with the state water quality standards as provided for in Chapter 173-201A WAC authorized by 33 USC 1313 and by Chapter 90.48 RCW, and with other appropriate requirements of state law.

4) Conformance with RCW 90.56, which prohibits discharge of oil, fuel or chemicals into state waters or onto land where such contaminants could potentially drain into state waters.

3.0 CURRENT STANDARDS

1) **Washington State Water Pollution Control Act.** The intent of actions required in this certification is to support the goals of the State of Washington to "maintain the highest possible standards to ensure the purity of all waters of the state consistent with public health and public enjoyment thereof, the propagation and protection of wild life, birds, game, fish and other aquatic life, and the industrial development of the state, and to that end require the use of all known available and reasonable methods by industries and others to prevent and control the pollution of the waters of the state of Washington" (RCW 90.48.010).

2) **Washington State Water Quality Narrative Standards (1997).** Within the Baker Hydroelectric Project area, the Baker River is classified as Class AA under Washington's Water Quality standards (WAC 173-201A). Under these standards, water quality for Class AA shall meet or exceed the requirements for all or substantially all uses. Characteristic uses include, but are not limited to:
   - Salmonid and other fish migration, rearing, spawning, and harvesting,
   - Wildlife habitat,
   - Recreation (primary contact recreation, sport fishing, boating, and aesthetic enjoyment).

3) **Washington State Water Quality Numeric Standards (1997).** Under the state water quality standards, specific numeric criteria have been assigned for various water quality parameters, including total dissolved gas (TDG), temperature, turbidity, and dissolved oxygen.

4) **Compliance schedule for dams.** (WAC 173-201A-510(5), 2005). A plan for water quality compliance for dams must include a compliance schedule not to exceed ten years.

5) **Toxics and oil spills.** (WAC 173-201A-030(2)(c)(viii), 1997 and RCW 90.56). Toxic concentrations shall be below those which have the potential either singularly or cumulatively to adversely affect characteristic water uses, cause acute or chronic conditions to the most sensitive biota dependent upon those waters, or adversely affect public health. RCW 90.56 prohibits any discharge of oil, fuel or chemicals into state waters or onto land where such contaminants could potentially drain into state waters.

4.0 FINDINGS

BACKGROUND INFORMATION ABOUT THE PROJECT

1) The Project is managed for power generation, with a capacity of 170 megawatts, and for flood control, recreation, and fish resources.

2) Before the Upper Baker Dam was built, Baker Lake existed as a natural lake that occupied approximately 550 acres of the valley bottom within the northern half of the current footprint of Baker Lake.

3) The construction, operation, and maintenance of these facilities were licensed by FERC in 1956. The Lower Baker Development (4,200 cfs, 71 MW unit) was originally constructed prior to federal licensing in 1925, while the Upper Baker Development (5,050 cfs, 91 MW, 2 units) was completed in 1959. The license issued in 1956 combined the operations of the Upper Baker and Lower Baker Developments into a single license.

4) The Baker River watershed covers 297 square miles and ranges in elevation from 10,778 feet above mean sea level (msl) at the summit of Mount Baker to 160 feet msl at the confluence of the Baker and Skagit Rivers near the town of Concrete. The Baker River is the second largest tributary to the Skagit River, which, in turn, is the largest river draining to Puget Sound. The Baker River's annual flow contributes approximately 16 percent of the Skagit River's flow.

5) The headwaters of the Baker River originate from glaciers and snowfields on Mount Baker, Mount Shuksan, and other nearby peaks. From its headwaters, the Baker River reaches the valley floor (elevation 1,000 feet msl) after about five miles. From this point, the Baker River Valley continues for about 25 miles to the confluence with the Skagit River. Lake Shannon and Baker Lake occupy about 16 lineal miles of the Baker River Valley.

6) Baker Lake and Lake Shannon are typically drawn down in the winter to provide storage for winter floods and spring runoff from snowmelt. Due to snowmelt and lower regional electricity demand during the warmer months, the reservoirs are refilled to nearly full pool between April and June. The reservoirs remain nearly full during the summer.

7) *Fish Passage*: An upstream trap-and-haul fish passage facility, referred to as the adult fish trap, is located in the Lower Baker River 0.65 miles below the Lower Baker Powerhouse. The adult fish trap began operation in 1926 at the powerhouse, and was rebuilt and relocated in 1958. The adult trap includes a 150-foot-long barrier dam, fish trap, holding ponds, and fish lift. The barrier dam precludes most upstream anadromous fish migration and directs fish to the adult fish trap. The adult fish trap operates throughout the year, with the exception of a brief maintenance period in May or June. There are also downstream fish passage facilities in the forebays of both Upper and Lower Baker Dams.

8) *Fish Populations*: The primary fish of concern in the vicinity are Sockeye, Coho, Chinook, Steelhead, Pink, Chum, Native Char, Cutthroat, and Bull Trout. Anadromous fish currently have access only to about 2,400 (731 m) feet of the 1.2 mile (1.9 km) long lower Baker River downstream of Lower Baker Dam. The channel is currently straight and entrenched, with an armored bed composed of cobble and boulder and no large woody debris or other obstructions that could provide hiding cover. Velocities are high throughout the channel when the Lower Baker Development is generating, and there are few refugia available for juvenile fish. The channel appears to be used primarily as a migration corridor by adult fish. Adult fish are able to traverse the lower Baker channel even when the Lower Baker Development is spilling. However, fish do appear to be reluctant to move through the lower Baker River when the Project is not generating and the Skagit River is low; the shallow riffle located just downstream of the fish barrier dam may be an impediment to upstream migration at low flows. (*Lower Baker River Habitat And Fish Use Study A-02*, June 2004, R2 Resource Consultants, Inc.)

9) The portion of the Baker River between the Lower Baker Dam and the powerhouse, also known as the Lower Baker bypass reach, has been deemed, by all practical means, inaccessible by humans. This 0.3 mile stretch of the river is bordered by the dam to the north, steep canyon

walls to the east and west, and the powerhouse discharge to the south. Flows in the bypass reach are due to leakage and are approximately 30-100 cfs under normal operation, however the occasional release of spill water from the dam creates unpredictable flow conditions in this stretch and the sudden surges of water can be hazardous. The presence of adult fish in this region is expected to be minimal since the fish barrier dam downstream of this point is designed to direct adult salmon to the fish trap for transport around the Baker dams.

10) A Settlement Agreement was filed with FERC on 11/30/04 that represented more than 4 years of collaboration between 20+ parties interested in the Baker Project. In this agreement, PSE agreed to contribute considerable resources towards the protection, mitigation and enhancement of wildlife and fish resources, recreation, aesthetics, cultural resources and water quality. The minimum instream flow and ramping rate requirements reflected in this certificate are a direct result of the efforts and numerous studies conducted by the parties involved.

COMPLIANCE WITH STANDARDS

11) Existing Water Quality: An extensive Water Quality Study (Study A05) was performed by PSE and HDR to assess the existing water quality of the Baker System. This study analyzed the parameters of concern for each stretch of the Baker system. Details can be found in the Final Report written by HDR, dated April 23, 2004. Results are summarized in Exhibit A.

12) Existing Water Quality standards are provided in Chapter 173-201A WAC; Exhibit B summarizes how several of the existing standards apply to the Baker System.

13) Total Dissolved Gas (TDG) exceedances currently occur in the Lower Baker tailrace during ramp down procedures (0-2 times per day) and spills (1-2 times per year). Ramp down-related exceedances will be mitigated with the operation of two or more new turbines to be installed before the end of the 8-year compliance period mandated in this certification. These turbines will reduce TDG production by shortening the ramp-down duration of the existing larger unit (4800 cfs). Details can be found in the TDG Abatement Plan prepared by PSE. Spills are expected to occur only once or twice per year to control reservoir levels, and these spills are often associated with the 7Q10 flow (the highest average 7-day once-in-ten-year flow) during which the TDG criteria does not apply.

14) The reservoirs tend to reduce the turbidity in the system, in general, by providing additional settling time. However, reservoirs can also increase the duration of storm-related high turbidity periods due to the presence of un-settleable suspended solids. Drawing reservoir levels down to elevations where settled fine particles are present and can be re-suspended can also increase downstream turbidity. To minimize impacts from draw-down, the Licensee shall operate the Project reservoirs to maintain minimum surface elevations in both reservoirs.

15) Ecology agrees with the Aquatics Resource Group that minimum instream flows are needed to support fish and other aquatic uses of the Skagit River and the lower portion of the Baker River. Ecology finds that these agreed upon flows will enhance conditions in the Skagit River during critical life stages of affected salmonids and serve as mitigation for some of the Project impacts on fish. This certification requires minimum instream flows, as detailed in the Conditions section of this document.

16) There is reasonable assurance that the aesthetics and recreational potential of the Baker System will be supported, sustained, and possibly enhanced as the requirements of the Settlement Agreement are fulfilled. The following aesthetics and recreation studies have been performed and can be obtained from PSE or from PSE's website: R05 Aesthetic/Visual Resource Study, R09 Electronic Traffic Monitoring, R11/R15 Recreation Capacity & Suitability Analysis and

Recreational Trail Analysis, R12 Site Inventory, R13 Recreation Visitor Survey, R16 Recreation Needs Analysis.

5.0 CONDITIONS

In view of the foregoing and in accordance with Section 401 of the Clean Water Act (33 USC 1341), RCW 90.48.260 and WAC Chapter 173-201A, Ecology finds reasonable assurance that the proposed license will attain compliance with state and federal water quality standards and other appropriate requirements of state law provided the following conditions are met. Accordingly, through this order issued and enforceable under RCW 90.48, Ecology grants Section 401 water quality certification to Puget Sound Energy for the Baker River Hydroelectric Project (FERC No. 2150-033) subject to the following conditions. This order will hereafter be referred to as the "certification".

5.1 General Requirements

1) The project shall comply with all water quality standards (currently codified in WAC 173-201A), ground water standards (currently codified in WAC 173-200), and sediment quality standards (currently codified in WAC 173-204) and other appropriate requirements of state law that are related to compliance with such standards.

2) Discharge of any solid or liquid waste to the waters of the state of Washington without approval from Ecology is prohibited.

3) In the event of changes or amendments to the state water quality, ground water, or sediment standards, or changes in or amendments to the state Water Pollution Control Act (RCW 90.48), or changes in or amendments to the Federal Clean Water Act, such provisions, standards, criteria or requirements shall apply to this Project and any attendant agreements, orders or permits, to the fullest extent permitted by law.

4) Puget Sound Energy shall obtain Ecology review and approval before undertaking any change to the Project or Project operations that might significantly and adversely affect the water quality (including significant and negative changes to designated uses by the various fish species) or compliance with any applicable water quality standard (including designated uses) or other appropriate requirement of state law.

5) Operations of the Floating Surface Collector (FSC) projects at Upper Baker Dam and Lower Baker Dam shall not cause any downstream water quality criteria exceedances. The downstream temperature and DO regimes shall not be negatively impacted by the operations of the FSCs.

6) This certification does not exempt compliance with the state's Coastal Zone Management Act.

7) This certification does not exempt compliance with other statutes and codes administered by federal, state, and local agencies.

8) The Washington State Department of Fish and Wildlife (WDFW) requires a Hydraulic Project Approval (HPA) (under 75.20 RCW) for work in waters of the State. The permittee will obtain a HPA from WDFW for any activities that require a HPA, prior to the beginning of those activities, and must comply with all conditions of the applicable WDFW HPA. To ensure compliance with HPA requirements, persons planning to conduct work under a nation-wide permit should contact WDFW at: Washington Department of Fish and Wildlife, 600 Capitol Way North, Olympia, WA 98501-1091, (360) 902-2200. For further information on HPA requirements and WDFW contacts, visit the following respective web pages: http://www.wa.gov/wdfw/hab/hpapage.htm, http://www.wa.gov/wdfw/depinfo.htm.

9) Ecology retains the right by order to require additional monitoring, studies, or measures if it determines there is likelihood or probability that violations of water quality standards or other appropriate requirements of state law have or may occur, or insufficient information exists to make such a determination.

10) Ecology reserves the right to issue administrative orders, assess or seek penalties, and to initiate legal actions in any court or forum of competent jurisdiction for the purposes of enforcing the requirements of this certification.

11) Ecology retains the right by order to modify schedules and deadlines provided under this certification or provisions it incorporates.

12) If a conflict or inconsistency arises between this certification and the Settlement Agreement or any part thereof, the terms of this certification shall govern.

13) If five or more years elapse between the date this certification is issued and issuance of the new FERC license for the Project, this 401 certification shall be deemed to be expired and denied at such time and PSE shall send Ecology an updated 401 application that reflects the current conditions, regulations and technologies. This provision shall not be construed to otherwise limit the reserved authority of Ecology to withdraw, amend, or correct the certification before or after the issuance of a FERC license.

14) This certification may be modified or withdrawn by Ecology prior to the issuance of the license based upon significant new information or changes to the Settlement Agreement or water quality standards or appropriate requirements of state law.

15) Ecology reserves the right to amend this Section 401 water quality certification if it determines that the provisions hereof are no longer adequate to provide reasonable assurance of compliance with applicable water quality standards or other appropriate requirements of State law. Such determination shall be based upon new information or changes in (i) the construction or operation of the Project, (ii) characteristics of the water, (iii) water quality criteria or standards, (iv) TMDL requirements, or (v) effluent limitations or other applicable requirements of State law. Amendments of the 401 certification shall take effect immediately upon issuance, unless otherwise provided in the order of amendment, and shall be appealable to the Pollution Control Hearings Board pursuant to RCW 43.21B. Ecology shall transmit such amending orders to the Federal Energy Regulatory Commission to update the Commission's records as to the current certification conditions.

16) Copies of this Order and associated permits, licenses, approvals and other documents shall be kept on site and made readily available for reference by PSE, its contractors and consultants, and by Ecology.

17) PSE shall allow Ecology access to inspect the project and project records required by this certification for the purpose of monitoring compliance with the conditions of this Order. Access will occur after reasonable notice, except in emergency circumstances.

18) PSE shall, upon request by Ecology, fully respond to all reasonable requests for materials to assist Ecology in making determinations under this Order and any resulting rulemaking or other process.

19) The conditions of this certification should not be construed to prevent or prohibit PSE from either voluntarily or in response to legal requirements imposed by a court, the FERC, or any other body with competent jurisdiction, taking actions which will provide a greater level of protection, mitigation, or enhancement of water quality or of existing or designated uses.

20) If an action required under or pursuant to this certification requires as a matter of federal law that the FERC approve the action before it may be undertaken, PSE shall not be considered in violation of these requirements to the extent that FERC refuses to provide such approval, provided that PSE diligently seeks such approval and so notifies Ecology.

21) Any work that is out of compliance with the provisions of this Order, or conditions that result in distressed, dying or dead fish, or any discharge of oil, fuel, or chemicals into state waters, or onto land with a potential for entry into state waters, is prohibited. If these occur, the applicant shall immediately take the following actions:

    a) Cease operations at the location of the violation to the extent such operations may reasonably be causing or contributing to the problem.

    b) Assess the cause of the water quality problem and take appropriate measures to correct the problem and/or prevent further environmental damage.

    c) Notify Ecology of the failure to comply. Spill events shall be reported immediately to Ecology's 24-Hour Spill Response Team at 425-649-7000 within 24 hours. Other non-compliance events shall be reported to Ecology's permit manager at 425-649-7160, or to Ecology's NWRO Water Quality Industrial Unit Manager at 425-649-7293.

    d) Submit a detailed written report to Ecology within five days that describes the nature of the event, corrective action taken and/or planned, steps to be taken to prevent a recurrence, results of any samples taken, and any other pertinent information.

    Compliance with these requirements does not relieve the applicant from responsibility to maintain continuous compliance with the terms and conditions of this Order or the resulting liability from failure to comply.

22) Submittals required by this certification are summarized in Exhibit C. Unless indicated otherwise, submittals shall be sent to the permit manager at the Department of Ecology, Northwest Regional Office, Water Quality Section, 3190 160th Avenue SE, Bellevue, Washington 98008.

5.2 INSTREAM FLOWS AND RAMPING RATES

The Project shall meet the Class AA narrative standards and protect the beneficial uses listed in WAC 173-201A-30. In addition, the Project shall comply with the primary instream flow requirements as set forth by the settlement agreement and approved by the Washington Department of Fish and Wildlife. These requirements are as follows:

1) Interim Operations. Until the new turbine units are installed at Lower Baker, PSE shall conduct operations in accordance with the Interim Protection Plan (IPP) analyzed in the Biological Opinion for Endangered Species Act Section 7 Consultation for the Baker River Hydroelectric Project (FERC No. 2150), NOAA Fisheries Consultation No. 2002/01040, or as approved by FERC. During this interim period, and effective upon license issuance, licensee shall use best efforts to protect other species of salmonids not addressed in the IPP by reducing the maximum flow from generation of 4,100 cfs to 3,200 cfs from the Lower Baker Development, or less if possible, during the spawning season, from September 1 to December 31. The licensee shall investigate methods and make best efforts to reduce ramping rates towards the standards established in Table 1. In making its best efforts, licensee shall consider the best interests of the fish resources by limiting the rate of change of incrementally decreasing flows, limiting the amount of daily amplitude change, and minimizing the difference between spawning and incubation flows. These flows may not necessarily be preferred for energy generation, but will be within the operational limitations of the existing Lower Baker dam and powerhouse. PSE

shall document their efforts to reduce ramping rates and the affect the various approaches have on water quality; this information shall be provided in the annual Flow Implementation Report (see *Annual Reporting* below).

Table 1. Instream Flows and Ramping Rates

Lower Baker Development Engineering Module: 3 turbines (one 4,100 cfs turbine, two 750-cfs turbines)				**Upper Baker Development**
Period	**Min. Instream Flow (cfs)**	**Max. Instream Flow (cfs) (1)**	**Downramping Rates (2)**	**Max Daily Pool Level Change**
Aug 1-31	1,000	3,600	1-inch per hour day and night	Max pool fluctuation ≤ 0.5 ft per rolling 24-hr period
Sep 1-3	1,000	3,600		
4-9	1,000	3,600		
10-30	1,000	3,200		No constraints on max daily pool level changes
Oct 1-7	1,000	3,200 (1)		
8-15	1,000	3,200 (1)		
16-20	1,000	3,200 (1)		
21-31	1,200	3,600 (1)		
Nov 1-15	1,200	3,600 (1)	2-inches per hour day and night	
16-30	1,200	3,600 (1)		
Dec 1-31	1,200	3,600 (1)		
Jan 1-31	1,200	5,600		
Feb 1-15	1,200	5,600		
16-28	1,200	5,600	0 inches per hour day and 2 inches per hour night	
Mar 1-31	1,200	5,600		
Apr 1-30	1,200	3,600		
May 1-8	1,200	3,600		
9-14	1,200	3,600		
15-22	1,200	3,600		
23-31	1,200	3,600		Max pool fluctuation ≤ 0.5 ft per rolling 24-hr period
Jun 1-15	1,200	5,600		
16-30	1,200	5,600	1-inch /hour day and night	
Jul 1-31	1,200	5,600		
(1) Maximum release constraints eliminated when Baker Lake inflow > 10% monthly exceedance flow OR Skagit River above the Baker River confluence > 24,000 cfs October through December. (2) Downramping rates measured at the Baker River at Concrete, but based on stage changes observed at Transect 1 on the mainstem Skagit River below the Baker River confluence (RM 56.5).				No minimum flow requirements. No maximum instream flow constraint. No downramping limitations for environmental interests.

2) Instream Flows and Ramping Rates. The licensee shall, beginning within 60 days following installation of the new generating units at the Lower Baker Development, operate the Project such that the minimum and maximum instream flows and ramping rates are consistent with those detailed in the Flow Implementation Plan (FIP), as required in Article 106 of the Settlement Agreement. Those flows and ramping rates are summarized in Table 1. These requirements also include additional pool level requirements listed in the Settlement Agreement Article 106.

The ramping rates shall apply on the Skagit River at transect 1, but will be measured on the Baker River based upon an established relationship shown on a table or curve to be developed by licensee by seeking input from the Aquatics Resource Group (ARG), Washington Department of Fish and Wildlife (WDFW), the Upper Skagit Indian Tribe, the Sauk-Suiattle Indian Tribe, the Swinomish Indian Tribal, the United States Fish and Wildlife Service (USFWS), National Oceanic & Atmospheric Administration (NOAA) Fisheries, and Forest Service of the United States Department of Agriculture (USDA-FS), and in consultation with Ecology, and in accordance with any approval received from Ecology.

These ramping restrictions are to be in effect whenever the flow, as calculated at the Skagit River above the Baker River confluence, is less than or equal to 26,000 cfs.

3) Construction of New Units. To achieve this flow regime and meet these ramping rates, the licensee shall, upon Commission approval of a construction plan and schedule: 1) install two or more new generating units with a total capacity of approximately 1500 cfs at the Lower Baker Development, to begin operation within six years after license issuance; and, if needed, 2) alter the existing facilities.

4) Monitoring Flow and Ramping Rates. Instream flows and ramping rates shall be monitored at the USGS gauge (Station 12193500) Baker River at Concrete or via other approved means. Ramping rates shall be calculated on a minimum of a 15-minute basis, not averaged over an hour. In the event that the gaging site USGS #12193500 Baker River at Concrete is no longer operable and another gage is used which is influenced by extraneous conditions (gages of the Skagit River, or tributaries, wind action, fluctuations in flow from upstream projects, for example), ramping compliance conditions should be modified to reflect site-specific conditions for that new gauge.

5) Effectiveness Monitoring. Monitoring shall also be performed to determine the effectiveness of the flow regime on fish life and water quality. Results of this monitoring shall be included in the annual Flow Implementation Report (see *Annual Reporting* below).

6) Annual Reporting. Within two years of license issuance and annually thereafter according to the schedule set forth in Article 102 of the Settlement Agreement, the licensee shall prepare and submit a Flow Implementation Report (FIR) regarding implementation of the requirements stated in Article 102 of the Settlement Agreement. The licensee shall develop the report in consultation with the ARG, including specifically Ecology, USFWS, NOAA Fisheries, USDA-FS, WDFW, the Swinomish Indian Tribal Community, Upper Skagit Indian Tribe and Sauk-Suiattle Indian Tribe. The Licensee shall provide a minimum of 60 days for the consulted entities to comment before filing the FIR with the Commission. The FIR shall include documentation of consultation, copies of comments, and licensee's responses based on Project-specific information.

7) Reporting Violations. In the event of a violation of the flow release or ramping schedule, the licensee shall report such violations as soon as discovered, but no later than 24 hours. Email notification, or other reporting mechanisms, agreeable to the parties, shall be made to the Commission, Ecology, and the ARG. The licensee shall provide a follow-up report to the Commission, Ecology, and the ARG within two weeks of the incident stating what occurred, licensee's response, and any measures licensee proposes to reduce future similar occurrences.

8) Temporary Modification to Flows and Ramping Rates – Natural Events. The flow regime required by this certification may be temporarily suspended and modified in the event that drought conditions, or some other natural event outside of the control of licensee, limit licensee's ability to comply with the requirements of this article. Prior to operating outside of

the conditions of this article, licensee shall: 1) notify the ARG and, at least, NOAA Fisheries, USFWS, Ecology, WDFW, the Sauk-Suiattle Indian Tribe, the Swinomish Indian Tribal Community, the Upper Skagit Indian Tribe, and Skagit County; 2) hold a meeting to identify potential options and solutions, which may include, but not be limited to, controlled generation and specified release patterns to protect fish to the extent practicable; and 3) obtain approval from Ecology. An example of controlled generation and specified release pattern solutions is as follows:

> If the total Project live storage (Baker Lake and Lake Shannon combined) drops below 160,000 acre-feet, licensee shall notify the ARG and reduce generation at the Lower Baker Development to the minimum instream flow in effect at that time until Project storage has been restored above 160,000 acre-feet.

9) Temporary Modification to Flows and Ramping Rates – Emergencies. In the event that a condition affecting the safety of the Project or Project works, as defined by 18 C.F.R. § 12.3(b)(4), occurs and does not allow for consultation to occur before responding, then flows and ramping rates may be temporarily modified following any consultation with Ecology that is possible given the exigencies of the event. If the flow is so modified, the licensee shall notify Ecology, the Commission and the ARG as soon as practicable after the condition is discovered, without unduly interfering with any necessary or appropriate emergency repair, alarm, or other emergency action procedure. Licensee shall provide all members of the ARG with a copy of any written report required by 18 C.F.R. § 12.10(a)(2) within ten (10) days of filing with the Commission.

10) Flow modifications. Flows in Table 1 may be modified, as appropriate to protect, mitigate, and enhance aquatic resources. If licensee obtains or receives new information that suggests different flows may better protect, mitigate, and enhance aquatic resources, then licensee will provide the new information to the ARG to allow consideration of a modification to Table 1. The ARG may propose a modification provided that the modification shall not require licensee to make additional funds available or to increase the total expected cost or other impact on Project generation or capacity, subject to the reserved authority of the Commission or Ecology. Modifications may be proposed at any time prior to completion of the FIP or through the plan amendment process thereafter. Following approval by the Commission, the licensee shall implement the modifications as required by the FIP.

5.3 TURBIDITY

The Project shall not cause any exceedance of the turbidity water quality criteria as specified in Chapter 173-201A WAC in any waters of the state, including all waters of the Project. These criteria may change over the course of this license; the following details how the existing turbidity criteria shall be applied to the Baker System. If water quality standards change, modifications to this application may be required.

Turbidity Criteria: Turbidity within the Project in non-reservoir areas shall not exceed 5 NTU over background turbidity when background turbidity is 50 NTU or less, or have more than a 10 percent increase when background turbidity is more than 50 NTU. Within the reservoirs, turbidity shall not exceed 5 NTU over background conditions. Natural background turbidity shall be based on the turbidity of tributaries that discharge into the Project reservoirs. Background turbidity ranges will be determined using a mathematical model and monthly tributary data collected over the first two years of the new license. After two years, the licensee shall submit to Ecology a Tributary Turbidity Data Report that proposes fixed, seasonal, background turbidity ranges to be used for compliance. This report shall be submitted to Ecology's permit manager at the Department of Ecology, Northwest Regional Office,

Water Quality Section, 3190 160th Avenue SE, Bellevue, Washington 98008. Reduced tributary sampling can be requested at that time. At any time beyond this, the licensee or Ecology may initiate studies to reassess and modify the established tributary turbidity ranges, in which case the licensee shall develop a study plan to be implemented following approval by Ecology.

Exceptions to the turbidity criteria would be the occurrence of significant storms or situations not Project related that would contribute to excessive suspension of solids throughout the Baker System. In such an incident Ecology may request an assessment of events that may be contributing to the turbidity increase. This assessment shall consider the impacts of recent flows through the dams, precipitation, and reservoir elevations.

Best Management Practices: Re-suspension of fine sediments on the lake bottom occurs when the reservoir water levels are drawn down to very low elevations. The Licensee shall operate the Project reservoirs to maintain a minimum NAVD88 surface elevation of 389 feet at Lake Shannon and 685 feet at Baker Lake to minimize the re-suspension of bottom sediments. Weekly turbidity monitoring shall be conducted by the Licensee when surface elevations are 5 feet above the established minimum lake surface elevations. If turbidity increases at the fish trap or in the upper Baker tailrace due to low lake elevations, lowering of the corresponding lake shall cease until approval from Ecology is obtained.

Requests to drop below the minimum lake water surface elevation for repair, maintenance, construction upgrades, or to provide fish flows shall be made to Ecology for approval. A short-term modification must be obtained from the Department of Ecology prior to turbidity exceeding the criteria. The permittee must apply for a short-term modification in writing to Ecology and WDFW at least three months prior to project initiation.

The licensee shall submit turbidity and pool elevation data to Ecology in the annual monitoring report (see *Section 5.6, Monitoring and Reporting)* for use in determining the efficacy and any need to revise the BMPs established herein. Either the licensee or Ecology may initiate future studies to reassess and modify the established minimum pool elevations. The licensee shall, in consultation with Ecology and the BRCC, develop a study plan to identify a new minimum water surface elevation. This study shall be implemented following approval by Ecology.

5.4 TOTAL DISSOLVED GAS (TDG)

The Project shall not cause any exceedance of the TDG water quality criteria as specified in Chapter 173-201A WAC in any waters of the state, including all waters of the Project. These criteria may change over the course of this license; the following details how the existing TDG criteria shall be applied to the Baker System. If water quality standards change, modifications to this application may be required.

TDG Criteria: Licensee shall comply with the water quality standard of 110% saturation for TDG throughout the Baker System, except when flows in the Baker River exceed the rate equivalent to the seven-day, ten-year flood frequency, as defined in WAC 173-201A-060(4)(a). Note that this 7Q10 flow value is based on a flow controlled by the hydroelectric project; this value changes over time and will be impacted by the new flow regime and potential flood storage requirements in the Settlement Agreement. At the writing of this certificate, the controlled 7Q10 flow for the Baker River is 13,300 cfs. The licensee or Ecology may request to reassess and modify the established 7Q10 flow; the modified flow shall be implemented following approval by Ecology.

For a controlled 7Q10 flow to qualify for the TDG exemption, it must be accompanied by a large storm event that provides an equivalent amount of water to the drainage basin. PSE shall determine and report to Ecology within six months of the license issuance how much precipitation, in inches per 24-hour period, produces a 7Q10 event. It is recognized that spills are often required in anticipation of or after a

7Q10 storm event. For this Project, the TDG exemption will be extended to include the 48-hour period prior to and after any qualifying 7Q10 storm event. Allowance for this 48-hour extension encourages emergency spills of longer duration that produce lower levels of TDG. It is preferred to produce lower levels of TDG over a longer duration rather than produce high, potentially acutely-toxic levels of TDG over a shorter duration.

Additionally, elevated TDG levels formed during qualifying 7Q10 events at Upper Baker Dam are often observed several days later at the Fish Trap. This observed spike of TDG at the Fish Trap shall not be considered a TDG criteria exceedance if it was formed during a qualifying 7Q10 event at Upper Baker.

Compliance Schedule: Existing data show that TDG compliance can be met throughout the Baker system except during ramp-down and spill events. Licensee shall to the greatest extent reasonable and feasible eliminate ramp-down related exceedances with the installation of new generating units as required by Article 106(E) of the Settlement Agreement, and the utilization of the new generating units in a manner consistent with reducing TDG production. Spill events should be avoided except in anticipation of and during 7Q10 storm events. A compliance schedule of 7 years will allow sufficient time for the turbine installation, at which point TDG compliance during ramp-down will potentially be achieved.

Best Management Practices: Spills and ramp-down procedures with air injection are the two known causes for TDG production in the Baker System. The licensee shall submit to Ecology for approval a TDG Abatement Plan that describes standard Project operation with regard to minimizing the TDG associated with spills and air-injected ramp-downs. This Plan shall be submitted to Ecology for approval within one year of license issuance. The Project shall be operated according to this plan once approved, both before and after installation of the new turbines at Lower Baker, with the objective of eliminating TDG producing events.

If monitoring shows the TDG abatement plan is not successful in meeting the standards within the first 10 years, Ecology will require further studies during the term of the license to analyze appropriate methods to reduce TDG production to within water quality standards. These methods may include operational changes and/or structural enhancements, but shall not interfere with the flow requirements stated in this certification.

Penstock Dewatering TDG Exceedances. Penstock de-watering at Lower Baker Dam for maintenance or inspection may require high spill water releases to meet the flow requirements within this certification. These high spill water releases will most likely result in TDG levels greater than 110%. Ecology has determined that no or low flow would harm biota more than the short-term elevated TDG levels, so TDG exceedances shall be allowed during maintenance-related penstock de-watering projects. However, TDG minimization shall remain a priority, and a short-term modification must be obtained from the Department of Ecology prior to spills exceeding 110% TDG. The permittee must apply for a short-term modification in writing to Ecology and WDFW at least three months prior to project initiation.

5.5 TEMPERATURE AND DISSOLVED OXYGEN (DO)

The Project shall not cause any violation of the temperature or dissolved oxygen water quality criteria as specified in Chapter 173-201A WAC in any waters of the state, including all waters within the Project boundary. These criteria may change over the course of this license; the following details how the existing criteria shall be applied to the Baker System. If water quality standards change, modifications to this application may be required.

Temperature and DO Criteria in Tailraces. Licensee shall comply with the Class AA water quality criteria of not exceeding 16°C and of not dropping DO below 9.5 mg/L in the Upper Baker and Lower

Baker Tailraces. If the presence or operation of the dams causes water temperature or DO in the tailraces to violate the criteria, the licensee shall follow the compliance schedule procedure outlined below.

Temperature and DO Criteria in Reservoirs. The lake class temperature and DO criteria that apply to the reservoirs mandates no measurable change from natural conditions. Natural conditions are unknown for the Baker system since the dams were built in 1925 and 1956, and natural conditions are difficult to apply to the Baker system since the reservoirs did not occur naturally. It is generally accepted that temperatures in the reservoirs are greater than the natural riverine conditions because the slower moving water increases the time and surface area exposed to heating by the sun and adjacent warmer air. There may be limited opportunities to reduce temperatures within a reservoir through operational or physical modifications. Further efforts to decrease tailrace temperatures can sometimes result in DO degradation and efforts to increase tailrace oxygen can sometimes result in the discharge of warmer more oxygen rich water. Where this is true and unavoidable, a balance can be achieved between these two parameters that provides optimum conditions for biota protection. Finding this balance requires detailed studies, therefore a formal compliance schedule is being proposed that focuses on meeting the water quality criteria downstream of the dams, and achieving the highest attainable water quality condition within the reservoirs. This goal is most consistent with the water quality standards and state and federal water pollution control laws.

Reservoir and Downstream Discharge Compliance Schedule: The licensee shall develop a Water Quality Attainment Plan (WQAP) that, in accordance with WAC 173-201A-510(5), provides a detailed strategy for maintaining the highest attainable water quality condition to best protect the biota with respect to temperature and DO that is reasonable and feasible to achieve in the reservoirs and tailraces. The plan shall identify and evaluate potential reasonable operational and structural changes to improve temperature and DO in the reservoirs and tailraces. Any changes that would conflict with other conditions of this order require prior approval by Ecology and the other Settlement Parties. The plan shall also identify the temperature and DO regime that is feasibly achievable based upon such evaluation, such that the temperature and DO in the discharge from each dam is protected to the highest degree feasible. It is recognized that a trade-off between these two parameters may be required (i.e., discharging the preferred cooler waters from deep in a reservoir may result in DO deficiency downstream). Thus, when it is not feasible to meet both the temperature and dissolved oxygen criteria at the same time, the intent is to find the point where the biological protection would be optimized. A Responsiveness Summary shall be incorporated into the WQAP that evaluates the effectiveness of the modifications, if any, and identifies follow-up studies and actions that can be performed to further improve temperature and DO based on the initial findings.

A draft of the WQAP shall be submitted to an advisory committee consisting of Ecology, the Aquatics Resource Group (ARG), and any interested member of the public for comment within seven years of license issuance. The draft shall include a year of daily DO and temperature data collected during normal operation with the new Lower Baker turbines and both Floating Surface Collectors (FSCs). The final WQAP shall include the comments and responses of PSE and must obtain Ecology approval within eight years of license issuance.

If water quality standards are not met, the WQAP must include a reasonable schedule for carrying out an adaptive process for evaluating feasible technical and operational changes that will improve water quality protection within 10 years of license renewal. This process may include modeling and physical testing of operational changes, and modeling changes in structural revisions and testing those structural revisions that can reasonably be implemented within the ten year period. Significant structural or operational revisions that may impose potentially unreasonable costs or create potentially unreasonable

societal effects may be evaluated as part of a formal Use Attainability Analysis consistent with the federal and state water quality regulations after the ten year compliance period has ended.

5.6 MONITORING AND REPORTING

Effective 60 days following license issuance from FERC, water quality shall be monitored as detailed in the Water Quality Monitoring Plan prepared by PSE on [date] and approved by Ecology on [date]. In summary, representative water quality measurements shall be made for the parameters listed in Table 2 at the identified locations and frequencies.

The intention of this monitoring program is to assess the water quality impact of the overall Project, as well as the impact of smaller, embedded, projects that could potentially degrade water quality. These smaller projects include the floating surface collectors (FSCs) at Upper and Lower Baker Dams and the new turbines at Lower Baker Dam. Any projects proposed in the future that could potentially degrade water quality will require a similar monitoring regiment to assure water quality standards continue to be met by the Project.

Water quality data shall be summarized and reported in a format approved by Ecology and submitted annually. Report shall include sample dates, times, locations, and results. Any violations of state water quality standards shall be highlighted. The report shall be submitted by March 31st of the year following the collection of the data. Data reports shall be submitted to the permit manager at the Department of Ecology, Water Quality Program, Northwest Regional Office.

5.7 MODIFICATIONS TO MONITORING

Puget Sound Energy may request to modify or eliminate parts of the monitoring program after a minimum of five (5) years of reliable data collection after the issuance of the new license. Modifications to this monitoring schedule can be requested by submitting to Ecology reasons for the modifications along with a modified Water Quality Monitoring Plan. Written approval must be received by Ecology before the modified plan can be implemented.

A more rigorous water quality sampling program for the listed parameters or additional parameters may be required by Ecology if necessary to protect water quality in the future based on monitoring results, regulatory changes, changes in Project operations, requirements of TMDLs, or to otherwise provide reasonable assurance of compliance with state water quality standards.

5.8 WATER QUALITY CRITERIA VIOLATIONS

Observed violations of flow, turbidity, TDG, pH, or observation of a sheen from petroleum products or of dying fish shall be reported to Washington Department of Ecology, Northwest Regional Office immediately or no later than 24 hours. Temperatures greater than 23°C and dissolved oxygen levels less than 3.5 mg/L shall also be reported immediately. The licensee shall provide a written follow-up report to Ecology within two weeks of the incident stating what occurred, whether the incident was due to natural events or human-related activities, the licensee's response, and any measures the licensee proposes to reduce future similar occurrences.

Observed violations in the Upper Baker Tailrace and below the Lower Baker Dam shall be highlighted in the annual monitoring report (see *Section 5.6, Monitoring and Reporting).*

Table 2. Water Quality Monitoring Schedule

Parameter	Location	Depths (ft)	Frequency
Flow	Upper Baker Tailrace	--	Hourly
	Lower Baker River	--	15 minutes[1]
Total Dissolved Gas (TDG)	Baker Lake Forebay, B-19	--	No monitoring
	Upper Baker Tailrace, UB-TR	> 7	Spill events: Hourly 24 hrs before until 48 hrs after event when feasible[2]
	Lake Shannon Forebay, SH-A	--	No monitoring
	Lower Baker Adult Fish Trap, FT	10	New turbine characterization: Hourly from one month before until a minimum of 3 months after installation. Spill events: Hourly 24 hrs before until 48 hrs after event when feasible[2]
Temperature[3]	Baker Lake Forebay, B-19	1, 40, 80, 120, 200	May 1–Oct 31: Hourly
	Upper Baker Tailrace, UB-TR	1	May 1–Oct 31: Hourly
	Lake Shannon Forebay, SH-A	1, 40, 80, 120, 200	May 1–Oct 31: Hourly
	Lower Baker Adult Fish Trap, FT	10	May 1–Oct 31: Hourly
Turbidity	Tributaries: Upper Baker River, Boulder Cr., Park Cr., Swift Cr.	surface	2 year Background Evaluation: Weekly
	Baker Lake Forebay, B-19	surface	During drawdown[4]: Weekly
	Upper Baker Tailrace, UB-TR	surface	During drawdown[4]: Weekly
	Lake Shannon Forebay, SH-A	surface	During drawdown[4]: Weekly
	Lower Baker Adult Fish Trap, FT	surface	During drawdown[4]: Weekly
Dissolved Oxygen[5]	Baker Lake Forebay, B-19	Every 20' from 0'-220'	May 1–Oct 31: Monthly @ all depths Nov 1–April 30: Monthly @ single depth
	Upper Baker Tailrace, UB-TR	surface	Monthly
	Lake Shannon Forebay, SH-A	Every 20' from 0'-220'	May 1–Oct 31: Monthly @ all depths Nov 1–April 30: Monthly @ single depth
	Lower Baker Adult Fish Trap, FT	10	Monthly
pH	Lower Baker Adult Fish Trap, FT	1	Monthly
Oil & Grease	Lower Baker Adult Fish Trap, FT	1	Annually

[1] Lower Baker River flow can be determined using data from USGS Station 12193500.

[2] Sampling may be infeasible due to lack of notification (unplanned spills) and unsafe sampling conditions.

[3] Temperature monitoring shall begin 1 year prior to any project expected to have temperature impacts (e.g. FSC installations at upper and lower dams, new turbine installation). Monitoring shall continue at frequencies outlined above until a monitoring reduction is agreed upon by PSE and Ecology.

[4] Drawdown monitoring is triggered when reservoir elevations are within 5 feet of target elevations and end a month after elevations are above 5 feet of target elevations. Target elevations are 685' and 389' for Baker Lake and Lake Shannon, respectively.

[5] DO monitoring shall begin 1 year prior to any project expected to have DO impacts (e.g. FSC installations at upper and lower dams, new turbine installation). Monitoring shall continue at frequencies outlined above until a monitoring reduction is agreed upon by PSE and Ecology.

5.9 CONSTRUCTION PROJECTS AND HABITAT MODIFICATIONS

The following applies to all in-water or near-water construction work related to the Project that can impact surface- or ground-water quality. This includes, but is not limited to, construction, operation, and maintenance of the following: fish collection structures, generation turbines, penstocks, hatcheries, transportation facilities, portable toilets, boat ramps, access roads, transmission corridors, structures, and staging areas. This also includes silviculture-related activities and emergencies for all activities related to Project operation.

If water quality exceedances are predicted as being unavoidable during construction or maintenance of a project, a short-term modification must be applied for in writing to Ecology and WDFW at least three months prior to project initiation. If any project has a long-term impact on a regulated water quality parameter, characterization monitoring must be performed for the impacted parameter(s), and a monitoring plan must be outlined in the Water Quality Protection Plan discussed below.

Construction Water Quality Protection Plan (WQPP)

A water quality protection plan (WQPP) shall be prepared, and followed, for all Project-related work that is in- or near-water that has the potential to impact surface- and/or groundwater quality. The plan shall include control measures to prevent contaminants from entering surface water and groundwaters, and shall include, but not be limited to, the following elements:

1) Stormwater Pollution Prevention Plan (SWPPP). The SWPPP shall specify the Best Management Practices (BMPs) and other control measures to prevent contaminants entering the Project's surface water and groundwaters. The SWPPP shall address the pollution control measures for licensee's activities that could lead to the discharge of stormwater or other contaminated water from upland areas. The SWPPP should also specify the management of chemicals, hazardous materials and petroleum (spill prevention and containment procedures), including refueling procedures, the measures to take in the event of a spill, and reporting and training requirements.

2) In-Water-Work Protection Plan. The In-Water-Work Plan shall be consistent with the SWPPP and shall specifically address the BMPs and other control measures for licensee activities that require work within surface waters. In addition to construction projects, this work includes, but is not limited to, the application of herbicides, pesticides, fungicides, disinfectants, and lake fertilization. Turbidity and dissolved oxygen shall be monitored upstream of the location where in-water construction is taking place and at the point of compliance during construction. Samples shall be taken at a minimum of once each day during construction in or adjacent to any water bodies within the project area that may be affected by the construction.

The plan should include procedures for monitoring water quality during construction, actions to implement should a water quality exceedance occur, and procedures for reporting any water quality violations to the Department of Ecology. The WQPP shall include all water quality protection measures consistent with a Hydraulic Project Approval (HPA) for the project. The WQPP shall be submitted to Ecology for approval at least 3 months prior to project initiation, and a copy of the WQPP shall be in the possession of the on-site construction manager, and available for review by Department of Ecology staff, whenever construction work is under way.

Best Management Practices for Construction

1) The work shall include all reasonable measures to minimize the impacts of construction activity on waters of the state. Water quality constituents of particular concern are turbidity, suspended sediment, settleable solids, oil and grease, and pH. These measures include use of

Best Management Practices (BMPs) to control erosion and sedimentation, proper use of chemicals, oil and chemical spill prevention and control, and clean-up of surplus construction supplies and other solid wastes.

2) During construction, all necessary measures shall be taken to minimize the disturbance of existing riparian, wetland or upland vegetation.

3) All construction debris shall be properly disposed of on land so that it cannot enter a waterway or cause water quality degradation to state waters. Retention areas or swales shall be used to prevent discharging of water from construction placement areas.

4) Puget Sound Energy shall ensure that any fill materials that are placed for the proposed improvements to habitat in any waters of the state do not contain toxic materials in toxic amounts.

Turbidity Standards for Construction Projects

1) Certification of this project does not authorize PSE to exceed the turbidity standard for Class AA waters beyond the mixing zone described below. Turbidity in Class AA waters shall not exceed 5 NTU over background turbidity when turbidity is 50 NTU or less, or have more than a 10 percent increase in turbidity when the background turbidity is more than 50 NTU.

2) Consistent with WAC 173-201A-100(7) and –110(3), a mixing zone is established within which the turbidity standard is waived. The mixing zone is established to allow only temporary exceedances of the turbidity criteria during and immediately after in-water work. The temporary turbidity mixing zone shall be as follows:

   a) For waters up to 10 cfs flow at the time of construction, the point of compliance shall be 100 feet downstream from activity causing the turbidity exceedance.

   b) For waters above 10 cfs up to 100 cfs flow at the time of construction, the point of compliance shall be 200 feet downstream from activity causing the turbidity exceedance.

   c) For waters above 100 cfs flow at the time of construction, the point of compliance shall be 300 feet downstream from activity causing the turbidity exceedance.

5.10 Spill Prevention and Control

No oil, fuel, or chemicals shall be discharged into state waters, or onto land with a potential for entry into state waters as prohibited by Chapter 90.56 RCW.

Best Management Practices: An Oil Spill Prevention, Containment, and Countermeasure Plan must be prepared that covers all oil-filled equipment to be used at the site. The plan must be kept on site, in the possession of the person in charge at all times. The plan shall be submitted to Ecology for approval within one year of license renewal. The plan must include the following Best Management Practices, at a minimum:

1) Care must be taken to prevent any petroleum products, paint, chemicals, or other harmful materials from entering the water.

2) Visible floating oils released from construction or Project operation shall be immediately contained and removed from the water.

3) All oil, fuel or chemical storage tanks shall be diked and located on impervious surfaces so as to prevent spills from escaping to surface waters or ground waters of the state.

4) Fuel hoses, oil drums, oil or fuel transfer valves and fittings, etc., shall be checked regularly for

drips or leaks, and shall be maintained and stored properly to prevent spills into state waters. No refueling of equipment shall occur over or within 50 feet of rivers, creeks, wetlands, or other waters of the state. Proper security shall be maintained to prevent vandalism.

5) Oil & grease usage should be regularly monitored. Observation of significant increase in usage should trigger an investigation for leaks, followed by any required maintenance or corrective action.

6) No emulsifiers or dispersants are to be used in waters of the state without prior approval from the Department of Ecology, Northwest Regional Office.

7) Wash water containing oils, grease, or other hazardous materials resulting from wash down of equipment or working areas shall be contained for proper disposal, and shall not be discharged into state waters.

Spill Response:

1) In the event of a discharge of oil, fuel or chemicals into state waters, or onto land with a potential for entry into state waters, containment and clean-up efforts shall begin immediately and be completed as soon as possible, taking precedence over normal work. Clean-up shall include proper disposal of any spilled material and used clean-up materials.

2) Spills into state waters, spills onto land with a potential for entry into state waters, or other significant water quality impacts, shall be reported immediately or no later than 24 hours to the Department of Ecology, Northwest Regional Office at 425-649-7000 (24-hour phone number).

3) Puget Sound Energy shall submit a detailed written report to Ecology within five (5) days of the spill event that describes the nature of the violation, corrective action, and/or planned steps to be implemented to prevent reoccurrence, results of samples taken, and any other pertinent information.

4) Compliance with this condition does not relieve Puget Sound Energy from responsibility to maintain continuous compliance with terms and conditions of this order or resulting liability from further failure to comply.

5.11 HERBICIDE / PESTICIDE / FERTILIZER APPLICATIONS

Prior to the use of herbicides, pesticides, fungicides, disinfectants, fertilizers, or algicides in or adjacent to waters of the state, coverage under an NPDES Aquatic Pesticides Permit shall be obtained, and conformance with any other applicable state requirement such as SEPA, shall be attained.

In addition, BMPs and other control measures for the application of herbicides, pesticides, fungicides, disinfectants, fertilizers, or algicides must be addressed in the In-Water-Work Protection Plan. An appropriate water quality monitoring plan shall be developed prior to the application and implemented for all related work.

5.12 HATCHERY OPERATION

Hatcheries discharging at least thirty (30) days per calendar year and producing more than 20,000 pounds of fish per year, or feeding more than 5,000 pounds of fish food during any calendar month, must apply for the general NPDES hatchery permit. The hatcheries within the Baker System do not meet this requirement at the writing of this certification, but the hatcheries shall comply with the BMPs and other requirements stated in the general NPDES hatchery permit as it exists now or in the future.

These BMPs shall be included in the Fish Propagation Facilities Plan ("FPFP") required by the settlement agreement.

5.13 INSPECTIONS AND ADMINISTRATION

Puget Sound Energy shall allow Ecology and WDFW such access as necessary to inspect the Project operations, Project area, and Project records required by this certification in order to monitor compliance with the conditions of this order.

Copies of this order and associated permits, licenses, approvals, and other documents shall be kept on site and made readily available for reference by Puget Sound Energy staff, its contractors and consultants, and by Ecology and WDFW.

6.0 CERTIFICATION

Subject to the above conditions and in accordance with Section 401 of the Clean Water Act (33 USC 1341), RCW 90.48.260, and Chapter 173-201A WAC, certification is granted to Puget Sound Energy for the Baker River Hydroelectric Project.

7.0 ORDER

Any person who fails to comply with any provision of this Order shall be liable for a penalty of up to twenty thousands dollars per day under the federal clean water act and up to ten thousand dollars for each day of continuing noncompliance or such other amount as may be authorized under state law as exists now or may be amended during the term of the license.

This Order may be appealed. Your appeal must be filed with the Pollution Control Hearings Board, P.O. Box 40903, Olympia, Washington 98504-0903 within thirty (30) days of your receipt of this Order. At the same time, your appeal must also be sent to the Department of Ecology, NWRO Office, 3190 160th Ave SE, Bellevue. Your appeal alone will not stay the effectiveness of this Order. Stay requests must be submitted in accordance with RCW 43.21B.320. These procedures are consistent with Chapter 43.21B RCW.

DATED __th day of MONTH 2005 at Bellevue, Washington.

_____

Kevin C. Fitzpatrick
Water Quality Section Manager
Northwest Regional Office
Department of Ecology
State of Washington

Exhibit A – Existing Water Quality in the Baker System
Study A05 Results (data from 2002-2004)

Parameter	Location	Existing Water Quality (based on 2004 A05 WQ Study)
Temperature	Baker Lake, forebay	Temperature profile with depth - more pronounced in summer months with bottom temperatures ≈7°C and surface temperatures reaching 20°C. Little or no stratification seen in winter months: bottom and surface temperatures ≈6°C.
	Upper Baker Tailrace	Range: ≈3-5°C in Feb/March to ≈16°C in Sept
	Lake Shannon, forebay	Temperature profile with depth - more pronounced in summer months with bottom temperatures ≈8°C and surface temperatures approaching 20°C. Little or no stratification seen in winter months: bottom and surface temperatures ≈7°C.
	Lower Baker Tailrace - Fishtrap	Range: ≈4°C in late February to ≈15.5°C in Sept/Oct
TDG	Baker Lake, 10 ft. deep in forebay	30 spot measurements show range of 93 - 108%
	Upper Baker Tailrace	12 spot measurements show range of 95 - 107%
	Lake Shannon, forebay	25 spot measurements show range of 92 - 104%
	Lower Baker Tailrace - Fishtrap	TDG excedances occur during turbine ramp down and large spills.
Turbidity	Baker Lake, forebay	generally below 10 NTU, storm levels of 288 NTU
	Upper Baker Tailrace	31 measurements show range of 2 - 155 NTU
	Lake Shannon, forebay	generally below 10 NTU, storm levels of 66 NTU
	Lower Baker Tailrace - Fishtrap	generally below 15 NTU, storm levels of 250 NTU
DO	Baker Lake, forebay	Surface: ave ≈10.5 mg/L, range:4-16 mg/L. 32’ depth: ave ≈10mg/L, range: 2-15 mg/L
	Lake Shannon, forebay	Surface: ave ≈10 mg/L, range: 6-12.5 mg/L. 32’ depth: ave ≈10mg/L, range: 5-13 mg/L
	Fishtrap	DO > 9.5 mg/L, range: 9.5 – 14 mg/L

Exhibit B – Application of Water Quality Standards to the Baker System

At the writing of this certificate, revisions to the existing 1997 Washington State Water Quality Criteria are being proposed. In anticipation of the adoption of new 2003 criteria, this certificate shall apply the more stringent of the two sets of criteria for each parameter. The applicable criteria are shown in the table below for each parameter.

Parameter	Location	Standard/Criteria to be met
Temperature	Baker Lake Lake Shannon	1997 Lake Class: No measurable change from natural conditions.
	Upper Baker Tailrace Adult Fishtrap	1997 Class AA: Not to exceed 16°C, or more than 0.3°C increase above natural conditions.
TDG	Baker Lake Upper Baker Tailrace Lake Shannon Adult Fishtrap	1997 Class AA & 2003 Core: Not to exceed 110% of saturation at any point of sample collection.
Turbidity	Baker Lake Lake Shannon	1997 WQ Stds, Lake Class: Turbidity shall not exceed 5 NTU over background conditions.
	Upper Baker Tailrace Adult Fishtrap	1997 Class AA & 2003 Core: Turbidity shall not exceed 5 NTU over background turbidity when background turbidity is 50 NTU or less, or have more than a 10 percent increase when background turbidity is more than 50 NTU.
DO	Baker Lake Lake Shannon	1997 WQ Stds, Lake Class: No measurable decrease from natural conditions.
	Upper Baker Tailrace Adult Fishtrap	1997 WQ Stds, Class AA: DO shall exceed 9.5 mg/L.
pH	Baker Lake Upper Baker Tailrace Lake Shannon Adult Fishtrap	1997 Class AA & 2003 Core: Shall be within range of 6.5 to 8.5 with a human-caused variation within the above range of less than 0.2 units.

Exhibit C – Submittal Requirements

The following submittals are requirements of this certification. Refer to the specified section for additional information. Unless indicated otherwise, submittals shall be sent to the permit manager at the Department of Ecology, Northwest Regional Office, Water Quality Section, 3190 160th Avenue SE, Bellevue, Washington 98008.

Section	Submittal	Frequency	First Submittal Date
5.1 General Requirements	Notification of Spill Events	As necessary	Within 24 hrs of event
5.2 Instream Flows and Ramping Rates	Flow Implementation Report	Annually	Within 2 years of license issuance
5.2 Instream Flows and Ramping Rates	Notification of Flow Violation	As necessary	Within 24 hrs of violation
5.3 Turbidity	Tributary Turbidity Data Report	Once	After 2 years of license issuance
5.4 Total Dissolved Gas	7Q10 Storm Event Size Determination	Once	Within 6 months of license issuance
5.4 Total Dissolved Gas	TDG Abatement Plan	Once, and updated as necessary	Within 1 year of license issuance
5.5 Temperature & DO	Water Quality Attainment Plan (WQAP)	Once, and updated as necessary	Within 7 years of license issuance
5.6 Monitoring & Reporting	Annual Water Quality Report	Annually	March 31st following license issuance
5.8 WQ Criteria Violations	Notification of WQ Violation	As necessary	Within 24 hrs of event
5.9 Construction Projects & Habitat Modifications	Construction Water Quality Protection Plan (WQPP)	As necessary	At least 3 months prior to project initiation
5.10 Spill Prevention and Control	Oil Spill Prevention, Containment, and Countermeasure Plan	Once, and updated as necessary	Within 1 year of license issuance

Exhibit D – Definitions

ARG – Aquatics Resources Group

"Background" means the biological, chemical, and physical conditions of a water body, outside the area of influence of the discharge under consideration. Background sampling locations in an enforcement action would be up-gradient or outside the area of influence of the discharge. If several discharges to any water body exist, and enforcement action is being taken for possible violations to the standards, background sampling would be undertaken immediately up-gradient from each discharge.

FERC - Federal Energy Regulatory Commission

"Natural conditions" or **"natural background levels"** means surface water quality that was present before any human-caused pollution. When estimating natural conditions in the headwaters of a disturbed watershed it may be necessary to use the less disturbed conditions of a neighboring or similar watershed as a reference condition.

NOAA - National Oceanic & Atmospheric Administration

NWRO – Ecology's Northwest Regional Office

"Pollution" means such contamination, or other alteration of the physical, chemical, or biological properties, of any waters of the state, including change in temperature, taste, color, turbidity, or odor of the waters, or such discharge of any liquid, gaseous, solid, radioactive, or other substance into any waters of the state as will or is likely to create a nuisance or render such waters harmful, detrimental, or injurious to the public health, safety, or welfare, or to domestic, commercial, industrial, agricultural, recreational, or other legitimate beneficial uses, or to livestock, wild animals, birds, fish, or other aquatic life.

USDA-FS - Forest Service of the United States Department of Agriculture

USFWS - United States Fish and Wildlife Service

WDFW - Washington Department of Fish and Wildlife